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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,042	08/17/2001	John R. Walton	1153-01	4497

7590 06/09/2003

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EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 06/09/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

A9-6

Office Action Summary	Application No. 09/932,042	Applicant(s) WALTON ET AL.	
	Examiner Chester T. Barry	Art Unit 1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 17 August 2001.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1, 3 - 10, 12, 13 is/are rejected.

7) ☒ Claim(s) 2 and 11 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> .	6) <input type="checkbox"/> Other: _____

U.S. Patent and Trademark Office
PTO-326 (Rev. 04-01)

Office Action Summary

Part of Paper No. 4

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It is suggested that in claims 1 – 5, 10, 11, 13, 9, 10, 12, applicant change the misspelling "volitilization" to "volatilization." Correction is requested, but not required. What is clearly a mere typographical error does not implicate any issue substantially related to patentability. Should applicant elect not to make this correction before final rejection, should it come to that, please note that the examiner would not be inclined nor required to correct the same by examiner's amendment. Nor shall the examiner permit correction of this particular error in a 312 amendment [37 CFR 1.312] insofar as applicant is on fair notice of the issue now.

Claims 1, 3, 4, 6, 7 are rejected under 35 U.S.C. Sec. 102(b) as being anticipated by the "iron pickling waste" process that was in public use in this country more than one year before this application was filed. Such use is described in Pomeroy's article published in 1946.

Pomeroy's section on "Iron Salts" in the article, "Progress Report on Sulfide Control Research," *Sewage Works*, July 1946, pages 628-632, 638-639, describes the following process in public use in this country more than one year before this application was filed: Adding an iron salt, i.e., Fe(II)SO_4 ,¹ a.k.a., ferrous sulfate (per claim 3), to a wastewater stream within a sanitary sewer system.² Notwithstanding Pomeroy's representation that the black precipitate was iron disulfide, i.e., FeS_2 , the skilled artisan at the time the claimed invention was made would have understood the directly-observed black precipitate to be iron(II) sulfide rather than iron disulfide postulated by Pomeroy in view of the color properties for various iron / sulfur compounds more recently reported by the CRC Handbook of Chemistry and Physics.³ That is, the iron salt addition effected the production of free iron ions which react with the unvolatilized hydrogen sulfide to form iron (II) sulfide. The addition of the iron salt-bearing iron pickling waste took place upstream of hydrogen sulfide volatilization, as evidenced by the subsequent formation of the black precipitate. The known process inherently adds an oxidant, i.e., the oxygen found in air, to the wastewater stream downstream of the iron salt addition because a free flowing sewerage stream, such as that found in a

¹ USP Pat No. 3906039 to Furkert (col 5 line 40) is cited as evidence that the hypothetical person having ordinary skill in this art is charged with the recognition that the iron pickling waste described by Pomeroy contains 10 – 25 wt % iron (II) sulfate.

² "[A] black deposit forms in a sewer of the [Los Angeles County] Sanitation Districts below the point where it receives iron pickling waste from a steel mill" (page 629, right column, first paragraph, penultimate sentence).

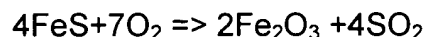
³ CRC Handbook at page B-127:

iron (II) sulfate	off-wh[ite]	
iron (III) sulfate	yel[low]	
iron (II) sulfate, heptahydrate	bl[ue]-gr[ee]n	
iron (II) sulfate, pentahydrate	wh[ite]	
iron (II) sulfate, tetrahydrate	gr[ee]n	
iron disulfide	yel[low]	
iron(II) sulfide	bl[ac]k-br[ow]n	←===
iron (III) sulfide	yel[low]-gr[ee]n	
iron(II) sulfite	gr[ee]n[i]sh or wh[ite]	

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sanitary sewer, is exposed to air at least at its surface and oxygen is absorbed from the air by diffusion.⁴ Inherently, free iron ions are regenerated from the iron (II) sulfide by dint of the oxidation by oxygen. The limitation in claim 1 that an oxidant be added downstream of the point at which the iron salt is added does not preclude the simultaneous addition of the very same oxidant upstream of the point of iron salt addition.

Per claim 4, it's inherent that the reaction product of FeS and O₂, as described in the prior art public use, is Fe₂O₃, as shown by Eqn. (5) of USP 5427752 to Suehiro.



It is well known that the iron in Fe₂O₃ is Fe(III) (ferric iron).

Claim 6 is rejected for the reasons given with respect to claim 1 above: Even if Applicants' motivation (enhancing solids separation in a primary clarifier) for performing process steps described in the prior art is not itself taught or described in the prior art, the lack of novelty of the combination of process steps is controlling on the issue of novelty. That is, applicants' "mental state" or purpose in doing X does not render X novel if X is described in the prior art even if applicants' purpose is not the same purpose which motivated the prior art to do and/or describe X. Moreover, claim 6 is not limited to separating solids in a primary clarifier, or even flowing any stream through a clarifier of any kind. Even so, the examiner would be remiss should he fail to point out that the prior art appears to appreciate enhanced primary clarifier separations with iron salt addition, as shown by the "Odor Control" reference at the first indented "bullet" item of page 140.

Claims 8, 10, 12, 13 are rejected under 35 USC §103(a) as obvious over the "iron pickling waste" process described above applied to claim 1 alone or further in view of "Odor Control in Wastewater Treatment Plants." Claim 10 requires that iron salt is added to the wastewater stream in an amount of at least 0.50 pounds Fe per pound sulfide controlled calculated as pounds H₂S. It is unclear from Pomeroy how much iron pickling waste was combined with the waste stream. The Pomeroy reference teaches, however, that the iron in the pickling waste reduced hydrogen sulfide odors. Insofar as the relative proportion of chemical reactants is a known result-effective variable in chemical reaction systems, it would have been obvious to have optimized through routine experimentation the relative proportion of added iron salts to dissolved hydrogen sulfide in the upstream waste stream. Similarly, the subject matter of claim 12 is also rejected based on this rationale. Alternatively, it would have been obvious to have used at least the stoichiometric amount of about 1.64 lb of Fe⁺⁺ per lb. of sulfide, as suggested by "Odor Control" (page 139 at top).

⁴ Pomeroy, page 637, left column, at "Summary."

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Per claim 8, Pomeroy at page 630 (text portion describing Fig 21, right hand column) suggests feeding iron salt treated and inherently-mildly-oxygenated wastewater to an anaerobic digester. Alternatively, it would have been obvious to have done so because digestion of waste water by anaerobic digestion was conventional at the time the invention was made. See, for example, Haase '750, *supra*.

Claim 5 is rejected under 35 USC §103(a) as obvious over the "iron pickling waste" process described above applied to claim 1 alone (or further in view of "Odor Control in Wastewater Treatment Plants"), further in view of USP 5906750 to Haase. Haase teaches that it is conventional to use a combination of an iron salt, e.g., ferric chloride, and an anionic polyelectrolyte, to improve sludge dewatering. Therefore, it would have been obvious to have added an anionic polyelectrolyte to the wastewater stream at the wastewater treatment plant in order to improve sludge dewatering. "Odor Control" at page 140 also suggests use of iron salts in combination with solids conditioning polymers. Such "solids conditioning polymers" are typically anionic polyelectrolyte polymers, as shown by Haase, for example.

Claim 9 is rejected under 35 USC §112, 2nd parag., for failing to particularly point out and distinctly claim the subject matter for which patent protection is sought. It is unclear if the "an oxidant" is the same chemical species as the "first oxidant," or whether the former may be any oxidant *other than* the "first oxidant." Unlike the misspellings noted *infra*, this rejection, of course, is indeed "substantially related to patentability" insofar as the claim – as presented – fails to adequately put the examiner and perhaps ultimately the public at large on fair notice of the proscribed subject matter. In short, correction is required.

Claims 2, 11 are allowable over art, but objected to as being dependent on a rejected base claim. Per claim 2, at least USP 5702615 to Numata describes simultaneous use of hydrogen peroxide and iron salts for the purposes to which applicants are directed, but the patent does not suggest addition at different locations. The "different locations" attribute is implied by the requirement that the waste water be – again by implication – a *flowing* "stream." Claim 11 is allowable over art for the same reason claim 2 is, and for no other discernible reason. Should one day claim 2 be found to be unpatentable,⁵ so too should claim 11 for – in the examiner's judgment – claim 11 is not independently patentable over claim 2.

Similarly, although prior art⁶ publication www.h2o2.com/applications/municipalwastewater/ironsalts2.html describes the

⁵ Notwithstanding our best efforts under the circumstances to issue only patentable subject matter, mistakes sometimes occur, as evidenced by the occasional invalidation of issued, unexpired, and otherwise enforceable US patents by the courts and other tribunals.

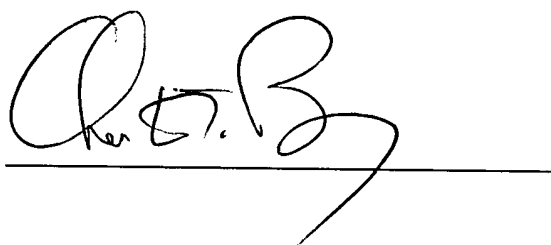
⁶ The "Page Info" screen for this page indicates that it was last modified on June 16, 2001, before this application was filed and before the invention was presumably invented. It appears that June 16, 2001, was therefore the date the page in its current form was last posted to the web. It is noted that the website appears to be that of the assignee of

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"synergistic" use of iron salts and hydrogen peroxide to reduce hydrogen sulfide odors of municipal wastewater sewerage, "synergistically" does not necessarily mean "first add iron salts to a flowing sewer stream to which is then, i.e., subsequently, added hydrogen peroxide."

Claim 9 is allowable over art for the same reasons as claim 2 is allowable over art, further because the art fails to suggest the 4 hour hydraulic retention time limitation.

Respectfully,

A handwritten signature in black ink, appearing to read "C.T. Barry", is written over a horizontal line. The signature is stylized with large loops and a long trailing stroke.

CHESTER T. BARRY
PRIMARY EXAMINER

703-306-5921

this application, but it is unclear what relationship, if any, the inventors of this application have to the web cite cited herein. Accordingly, the web page appears to be available as prior art through §102(a).